AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A method for coating a ~~depositing nano-particles on~~ micro-structured ~~objects~~ object wherein the micro-structured object ~~comprise~~ comprises features having sizes measured in microns or smaller with nano-particles, wherein the method comprises the steps of:

   a. forming a nano-particle dispersion comprising;

      i. ~~providing~~ a polymer comprising an acrylate selected from the group consisting of a sodium acrylate, a potassium acrylate, and a calcium acrylate;

      ii. ~~providing~~ a nanoparticle metal component; and

      iii. ~~providing~~ a carrier liquid of low viscosity;

      wherein the resultant nano-particle dispersion comprises nano-particles having a mean average diameter than about 10 nm or less;

   b. coating with the nano-particle dispersion a micro-structured object having features formed thereon, wherein each of the features have a dimension of between 50 nanometers and 200 microns ~~with the nano-particle dispersion forming a~~ to pull the nano-particle dispersion into or onto the microstructured object and form a nano-composite.

2. (original) The method of claim 1, wherein the nano-particles are crystals.

3. (original) The method of claim 1, wherein the micro-structured objects comprise a material containing a microstructure, a porous material with micro-pores, a material into that a microstructure pattern has been formed, and combinations thereof.

4. (original) The method of claim 1, wherein the dimension is between 50 nanometers and 100 microns.

5. (canceled)

6. (original) The method of claim 1, wherein the metal component comprises a transition metal, a metal oxide, and combinations thereof.

7. (original) The method of claim 6, wherein the transition metal comprises platinum, ruthenium, palladium, gold, and combinations thereof.

8. (original) The method of claim 1, wherein the carrier comprises water and an alcohol with a lower surface tension than water.

9. (original) The method of claim 8, wherein the alcohol comprises a methanol, ethanol, propanol, and combinations thereof.

10. (original) The method of claim 8, wherein the water comprises deionized water, and distilled water, and combinations thereof.

11. (original) The method of claim 6, wherein the metal oxides comprise iron oxide, titanium oxides, transition metal oxides, and combinations thereof.

12. (original) The method of claim 1, wherein the dispersion comprises a nano-particle concentration of at least about 30% of the metal component.

13. (original) The method of claim 1, wherein the nano-particles have a mean average diameter of between 3 nm and 5 nm.

14. (original) The method of claim 1, wherein the dispersion is thermodynamically stable at room temperature.

15. (original) The method of claim 1, wherein the dispersion has a viscosity of between 20 centipoids and 300 centipoids.

16. (original) The method of claim 1, wherein the dispersion further comprises an ultraviolet stabilizer.

17. (original) The method of claim 1, wherein the features comprise pores, capillaries, channels, voids, ridges, fins, embossments, and combinations thereof.

18. (original) The method of claim 1, wherein each feature comprises a diameter between 25 nanometers and 10 microns.

19. (original) The method of claim 1, wherein the features have an aspect ratio greater than 2 and an overall width between 100 nanometers and 200 microns.

20. (original) The method of claim 1, wherein the step of coating is repeated "n" times, wherein "n" is an integer greater than 2, thereby forming a nano-composite.

21. (original) The method of claim 1, wherein the step of coating is performed by spraying the dispersion on the micro-structured object.

22. (original) The method of claim 1, wherein the step of coating is performed by soaking the micro-structured object in the dispersion.

23. (original) The method of claim 1, wherein the step of coating is by painting, printing, dipping, dripping, or combinations thereof.

24. (original) The method of claim 23, wherein the step of dripping is performed by using a computed volume of dispersion to coat a known mass of nano-particles on the micro-structured object.

25. (original) The method of claim 1, further comprising the step of depositing "n" nano-particle dispersions comprising a metal component that differs from prior dispersion metal components and wherein "n" is an integer greater than 2, thereby forming a nano-alloy.

26. (original) The method of claim 25, wherein the nano-alloy comprises a transition metal different from the nano-particle dispersion.

27. (original) The method of claim 25, wherein the nano-alloy comprises a metal oxide different from nano-particle dispersion.

28. (original) The method of claim 25, wherein the nano-alloy comprises a metal oxide and the nano-particle dispersions comprises a transition metal.